[0019] A potential problem is presented by the small size of the device in that there is limited exterior surface area for the inclusion of user input and device output features. This is especially true for the "prime real estate" on the front face of the device, where it is most advantageous to include a display screen **322** that outputs information to the user and a keypad for entry of textual data.

[0020] In a presently described embodiment, a key arrangement (a "virtual" key arrangement) is presented entirely on the display screen **322** of the handheld communication device, while in other embodiments both a physical keyboard and a key arrangement on the display screen **322** are presented to the user on the front surface of the device. In this presentation, the key arrangement shown on the display screen **322** can be the same as or different from the arrangement of the physical keyboard. The key arrangements are presented below other data on the display screen **322**, thereby assuring that the user's hands and fingers do not block viewing of the other data during entry.

[0021] To facilitate textual data entry, an alphabetic key arrangement can be displayed on the display screen **322** for inputting textual characters. In one version, a full alphabetic key arrangement is utilized in which there is one letter per key (see FIG. **1** for an example). This is preferred by some users because the keys can be arranged to resemble a standard keyboard with which they are most familiar. In this regard, the associated letters can be advantageously organized in QWERTY, QWERTZ, AZERTY, or Dvorak layouts, among others, thereby capitalizing on certain users' familiarity with these special letter orders. In order to stay within the bounds of a limited display surface area, however, each of the keys must be commensurately small when, for example, twenty-six keys must be provided in the instance of the English language. An alternative configuration is to provide a reduced alphabetic key arrangement in which at least some of the keys have more than one letter associated therewith, as is also known in the art. This means that fewer keys are required, which makes it possible for those fewer keys to each be larger than in the instance when a full key arrangement is provided on a similarly dimensioned device. Some users will prefer the solution of the larger keys over the smaller ones, but it is necessary that software or hardware solutions be provided in order to discriminate which of the several associated letters the user intends based on a particular key actuation, a problem the full alphabetic key arrangement avoids. Preferably, this character discrimination is accomplished utilizing disambiguation software included on the device. To accommodate software use on the device, a memory and microprocessor are provided within the body of the handheld unit for receiving, storing, processing, and outputting data during use. Therefore, the problem of needing a textual data input means is solved by the provision of either a full or reduced alphabetic key arrangement on the presently disclosed handheld electronic device.

[0022] Keys perform well as data entry devices but present problems to the user when they must also be used to effect navigational control over a screen-cursor. In order to solve this problem, the handheld electronic device can include an auxiliary input that acts as a cursor navigational tool and which is also exteriorly located upon the front face of the device. Its front face location is particularly advantageous because it makes the tool easily thumb-actuable. In a particularly useful embodiment, the navigational tool is a trackball which is easily utilized to instruct two-dimensional screen cursor movement in substantially any direction, as well as to act as an actuator when the ball of the trackball is depressed like a button. The placement of the trackball is preferably below the display screen **322** and above any additional input buttons (e.g., physical buttons) on the front face of the device; here, it does not block the user's view of the display screen **322** during use (see FIG. **1** for an example).

[0023] In some configurations, the handheld electronic device may be standalone in that it does not connect to the "outside world." One example would be a PDA that stores such things as calendars and contact information but is not capable of synchronizing or communicating with other devices. In most situations such isolation will be viewed detrimentally in that synchronization is a highly desired characteristic of handheld devices today. Moreover, the utility of the device is significantly enhanced when connectable within a system, and particularly when connectable on a wireless basis in a network in which voice, text messaging, and other data transfer are accommodated.

[0024] As shown in FIG. **1**, the handheld device **300** is cradleable in the palm of a user's hand. The handheld device **300** is provided with a touch-sensitive display screen **322** for communicating information to a user and a key arrangement **280** on the display screen **322** to enter text data and place telephone calls. As explained in greater detail below, the display screen is adapted to provide tactile feedback to the user to indicate that a particular key, icon, or other graphical user interface (GUI) has been "pressed" or activated. Such a display screen is referred to herein as "haptic, touch-sensitive," or "HTS." In one embodiment, a set of navigational keys **190** are provided below the display screen **322** on the handheld device **300**. This set of navigational keys **190** are provided through physical keys that affixed to the device and allow the user to navigate through an application page shown on the display screen **322**. In this set of navigational keys **190**, a connect/send key **6** is preferably provided to assist the user in placement of a phone call. Additionally, a disconnect/end key **8** is provided. The connect/send key **6** and disconnect/end key **8** preferably are arranged in a row that includes an auxiliary input device in the form of a navigation tool which is a trackball navigation tool **321** in at least one embodiment. Additionally, the navigational keys **190** that includes the trackball navigation tool **321** preferably has a menu key **7** and an escape key **9**. The menu key **7** is used to bring up a menu on the display screen **322** and the escape key **9** is used to return to the previous screen or previous menu selection. While the navigational keys **190** in this embodiment are arranged using physical keys, other embodiments do not have a physical navigation row of keys and use only navigational keys shown on the display of the device **300**.

[0025] As further illustrated via FIGS. **2**A and **2**B, the HTS display screen **322** may include a full alphanumeric key arrangement **280** that is reconfigurable to a different key arrangement **282** as a function of the application being implemented by the device (e.g., sending emails or text messages (FIG. **2**A) or placing phone calls (FIG. **2**B)). The display screen **322** presents these visibly different key arrangements through a touch-sensitive display mechanism which can be a LCD screen. Details regarding the layers of material involved in the construction of such HTS display screens **322** are described below in relation to FIGS. **3**A and **3**B.

[0026] An exemplary embodiment of the technology described in this disclosure concerns a haptic, touch-sensitive (HTS) display screen **322**. The HTS display screen **322** is